PAT-NO: JP409130284A

DOCUMENT-IDENTIFIER: JP 09130284 A

TITLE: BATTERY-DRIVEN TYPE COMMUNICATION EQUIPMENT

PUBN-DATE: May 16, 1997

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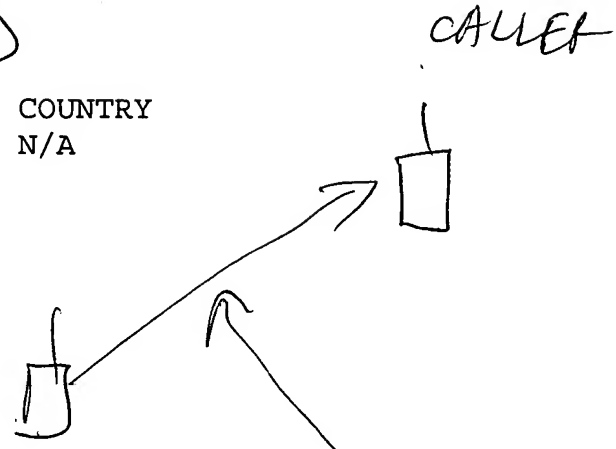
APPL-NO: JP07283582

APPL-DATE: October 31, 1995

INT-CL (IPC): H04B001/16, H04N007/14



ABSTRACT:

PROBLEM TO BE SOLVED: To reduce the bewilderment and the unpleasant feeling of an opposite user by making the user of a communication opposite equipment able to recognize that effect when the decrease of a battery residual amount occurs.

SOLUTION: The value of a battery voltage V01 is monitored by being compared with threshold values TH1 and TH2 during communication, and at the point of time when the digital value DS of the battery voltage V0 is turned to be TH1<DS<TH2, a communicating party is informed of low voltage message information by superimposing it to transmission voice signals and transmitting it, power supply to a display part 32 is turned off and remaining using time is prolonged. At the point of time when the digital value DS of the

battery
voltage V0 is turned to be TH1>DS, the power supply to a signal transmission
and reception part 10 is turned off after performing an on-hook processing.

* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The dc-battery actuation mold communication device characterized by to provide the advice means of a dc-battery condition for notifying to a communications partner that the message information on to that effect is a dc-battery residue detection means for detecting the remaining capacity of said dc-battery in the dc-battery actuation mold communication device which performs communication link actuation at least as a power source for a dc-battery when it falls during communication link actuation rather than the threshold which was detected by said dc-battery residue detection means, and which it remained and capacity set up beforehand.
[Claim 2] In the dc-battery actuation mold communication device which performs communication link actuation for a dc-battery at least as a power source The dc-battery residue detection means for detecting the remaining capacity of said dc-battery, The halt control means of operation which stops the actuation concerning a communication link when it falls during communication link actuation rather than the threshold which was detected by said dc-battery residue detection means, and which it remained and capacity set up beforehand, The dc-battery actuation mold communication device characterized by providing the advice means of a halt of operation for notifying the message information on a purport that the communication link actuation concerned is stopped to a communications partner in advance of a halt of the actuation concerning the communication link by this halt control means of operation.
[Claim 3] In the dc-battery actuation mold communication device which performs two or more actuation which includes communication link actuation by using a dc-battery as a power source The dc-battery residue detection means for detecting the remaining capacity of said dc-battery, The halt control means of operation which stops actuation in part excluding communication link actuation among actuation of said plurality when it falls during communication link actuation rather than the threshold which was detected by said dc-battery residue detection means and which it remained and capacity set up beforehand, The dc-battery actuation mold communication device characterized by providing the advice means of a halt of operation for [which is depended on this halt control means of operation] notifying in part the message information concerned on a purport that actuation is stopped in part to a communications partner in advance of a halt of operation.
[Claim 4] While transmitting the image data picturized by the image pick-up means to a communications partner, performing transceiver actuation of voice data between communications partners When actuation which receives the image data sent from the communications partner, and is displayed on a display means is being performed, a halt control means of operation When the remaining capacity of a dc-battery falls rather than the threshold set up beforehand, the display action of the receiving image data in said display means is stopped. The advice means of a halt of operation The dc-battery actuation mold communication device according to claim 3 characterized by notifying the message information on to that effect to a communications partner in advance of a halt of said display action.
[Claim 5] While transmitting the image data picturized by the image pick-up means to a communications partner, performing transceiver actuation of voice data between communications

partners When actuation which receives the image data sent from the communications partner, and is displayed on a display means is being performed, a halt control means of operation When the remaining capacity of said dc-battery falls rather than the threshold set up beforehand, the image pick-up actuation in said image pick-up means is suspended. The advice means of a halt of operation The dc-battery actuation mold communication device according to claim 3 characterized by notifying the message information on to that effect to a communications partner in advance of a halt of said image pick-up actuation.

[Claim 6] While transmitting the image data picturized by the image pick-up means to a communications partner, performing transceiver actuation of voice data between communications partners When actuation which receives the image data sent from the communications partner, and is displayed on a display means is being performed, a halt control means of operation When the remaining capacity of a dc-battery falls rather than the threshold set up beforehand The display action of the receiving image data in said display means and the image pick-up actuation in said image pick-up means are suspended simultaneous or gradually. The advice means of a halt of operation the dc-battery actuation mold communication device according to claim 3 characterized by notifying the message information on to that effect to a communications partner in advance of said display action and said halt of each image pick-up actuation.

[Claim 7] A halt control means of operation is a dc-battery actuation mold communication device according to claim 4 or 6 characterized by memorizing in memory the image data sent from the communications partner after the halt of a display action.

[Claim 8] A halt control means of operation is a dc-battery actuation mold communication device according to claim 5 or 6 characterized by reading the image data memorized beforehand to memory, and transmitting to a communications partner after a halt of image pick-up actuation.

[Claim 9] The advice means of a halt of operation is a dc-battery actuation mold communication device according to claim 4 to 8 characterized by inserting or superimposing the voice-told message information on a purport that actuation is suspended on voice data, transmitting to a transmitting partner, and notifying the purport which suspends actuation to a communications partner in acoustic sense.

[Claim 10] The advice means of a halt of operation is a dc-battery actuation mold communication device according to claim 4, 6, 7, or 8 characterized by inserting or superimposing the image message information on a purport that actuation is suspended on image data, transmitting to a transmitting partner, and notifying visually the purport which suspends actuation to a communications partner.

[Claim 11] The advice means of a halt of operation is a dc-battery actuation mold communication device according to claim 1 to 8 characterized by making the message information corresponding to said control code generate in a communications partner, and making it output by transmitting the specific control code beforehand set up corresponding to the message information on a purport that actuation is suspended to a communications partner.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates a dc-battery to the communication device of the dc-battery actuation mold which performs communication link actuation at least as a power source like the pocket mold personal computer equipped with a portable telephone or communication facility, and a pocket mold image record regenerative apparatus with a visual telephone function.
[0002]
[Description of the Prior Art] Generally, the electronic equipment of the pocket mold which operates considering a dc-battery as a power source has dc-battery residue lowering detection and a display function. This function detects the remaining capacity of a dc-battery by supervising battery voltage etc., while using a device, when the remaining capacity falls rather than this threshold as compared with the threshold which set up the remaining capacity of this dc-battery beforehand, it displays the mark showing residue lowering of a dc-battery on the display of a device, or generates singing from a sounder etc., and, thereby, reports residue lowering of a dc-battery to a user.
[0003]
[Problem(s) to be Solved by the Invention] However, since such conventional dc-battery residue lowering detection and display capabilities were what reports lowering of a dc-battery residue only to the user of the device to the last, they had the following troubles.
[0004] That is, recently, the pocket device equipped with communication facility like the portable telephone or the personal computer is beginning to spread, and the pocket mold electronic equipment of an image record regenerative apparatus further with a visual telephone function etc. new type is also going to be developed. However, when the conventional dc-battery residue lowering detection and display capabilities mentioned above to these devices are given as it was, surely lowering of a dc-battery residue is reported to the user of the device by the dc-battery residue lowering display, but the speaker of a communications partner cannot know lowering of the dc-battery residue of a communications-partner device, unless that is separately told by oral etc. from a phase sign language person. For this reason, it was in the middle of the communication link, and even if the communication link condition changed or it became a communication interruption again, that cause might not be found, but puzzlement and displeasure might be memorized, and it was not very desirable.
[0005] The user of communications-partner equipment enables it to get to know that, and the place which this invention was made paying attention to the above-mentioned situation, and is made into that object is to offer the dc-battery actuation mold communication device which enabled this to mitigate puzzlement of a partner user and displeasure, when lowering of a dc-battery residue arises.
[0006]
[Means for Solving the Problem] In order to attain the above-mentioned object, invention concerning claim 1 In the dc-battery actuation mold communication device which performs communication link actuation for a dc-battery at least as a power source The dc-battery residue detection means for detecting the remaining capacity of the above-mentioned dc-battery, When it falls rather than the threshold which

established the advice means of a dc-battery condition, and was detected by the above-mentioned dc-battery residue detection means during communication link actuation and which it remained and capacity set up beforehand The message information on the purport that the dc-battery residue fell with the above-mentioned advice means of a dc-battery condition is notified to a communications partner.
[0007] Therefore, according to this invention, a user becomes possible [getting to know certainly dc-battery residue lowering of communications-partner equipment] from a communications partner by the dc-battery residue lowering message notified automatically, even if lowering of a dc-battery residue is not told by oral etc. from the speaker of a communications partner.
[0008] Moreover, invention concerning claim 2 notifies the message information on a purport that the actuation concerning the communication link concerned is stopped with the advice means of a halt of operation to a communications partner in advance of a halt of the actuation concerning this communication link, when falling during communication link actuation rather than the threshold which the remaining capacity of a dc-battery set up beforehand and stopping the actuation concerning a communication link according to this.
[0009] If it does in this way, a user will become possible [getting to know dc-battery residue lowering of communications-partner equipment by the dc-battery residue lowering message notified from communications-partner equipment], before the actuation concerning a communication link is suspended with lowering of a dc-battery residue in communications-partner equipment. For this reason, even if the actuation concerning a communication link stops in communications-partner equipment during a communication link, it becomes possible to grasp that cause in advance, and the nonconformity which memorizes puzzlement and displeasure by this is mitigated.
[0010] furthermore, invention concerning claim 3 -- a communication link -- the part fall rather than the threshold which the remaining capacity of a dc-battery set up beforehand working, and excluding communication link actuation among two or more actuation according to this -- the case where actuation is stopped by the halt control means of operation -- this part -- a halt of operation -- preceding -- the advice means of a halt of operation -- the part concerned -- the message information on a purport stop actuation makes notify to a communications partner
[0011] thus, the part accompanying [when it carries out] dc-battery residue lowering of communications-partner equipment in a user -- a halt of operation -- beforehand -- moreover -- this part -- even if it becomes possible to get to know clearly by the message which expressed a halt of operation directly and actuation stops in part with communications-partner equipment by this, memorizing puzzlement and displeasure to this decreases.
[0012] Furthermore, while invention concerning claim 4 performs transceiver actuation of voice data between communications partners and transmitting the image data picturized by the image pick-up means to a communications partner It is in the equipment which performs actuation which receives the image data sent from the communications partner, and is displayed on a display means. When the remaining capacity of a dc-battery falls rather than the threshold set up beforehand, it is made to stop the display action of the receiving image data in the above-mentioned display means, and the message information on to that effect is notified to a communications partner in advance of a halt of the display action of a parenthesis.
[0013] thus, the thing for which the image which the user has transmitted from self equipment will no longer be expressed as communications-partner equipment if it carries out -- beforehand -- and it becomes possible to get to know clearly. For this reason, it becomes possible to perform the suitable response of telling henceforth the information on the map which was carrying out image transmission till then, for example, a photograph, etc. orally.
[0014] Furthermore, when the remaining capacity of a dc-battery falls rather than the threshold set up beforehand, it is made for invention concerning claim 5 to suspend the image pick-up actuation in an image pick-up means instead of a halt of the above-mentioned display action, and it notifies the message information on to that effect to a communications partner in advance of a halt of the above-mentioned image pick-up actuation.
[0015] If it does in this way, even if he becomes ** while the image which had come from

communications-partner equipment communicates, a user becomes possible [getting to know the reason clearly in advance], and he can continue the communication link with voice, without this memorizing puzzlement etc. also after that.
[0016] furthermore, when the remaining capacity of a dc-battery falls rather than the threshold set up beforehand, it is made for invention concerning claim 6 to suspend simultaneous or gradually the display action of the receiving image data in a display means, and the image pick-up actuation in an image pick-up means, and it notifies the message information on to that effect to a communications partner in advance of the above-mentioned display action and a halt of each above-mentioned image pick-up actuation.
[0017] If it does in this way, it will become possible [a user] to know clearly in advance that the image transmitted from self equipment is no longer expressed as communications-partner equipment, and becoming ** while the image which had come from communications-partner equipment communicates, and the communication link with voice can be continued, without this memorizing puzzlement etc.
[0018] Moreover, invention concerning claim 7 memorizes in memory the image data sent from the communications partner instead of the display action after the display-action halt of the above-mentioned receiving image data. If it does in this way, it becomes possible to reproduce the image data memorized in memory after communication link termination, and to check the content, and informational loss can be prevented.
[0019] Furthermore, invention concerning claim 8 reads the image data memorized beforehand to memory, and it is made to transmit to a communications partner after a halt of the above-mentioned image pick-up actuation. If it does in this way, sending the image of the speaker who memorized before the image pick-up halt, for example to the user of communications-partner equipment can be continued as still picture data, and the nonconformity from which image data serve as ****** thoroughly by this will be prevented.
[0020] Moreover, invention concerning claim 9 inserts or superimposes voice-told message information on voice data, and it is made to transmit to a transmitting partner as an advice means of the message information on a purport to suspend actuation. If it does in this way, the purport which suspends actuation can be notified to a communications partner in acoustic sense. For this reason, even when the partner user is not looking at the receiving image, it becomes possible to notify certainly the purport which suspends actuation to a partner user.
[0021] Furthermore, invention concerning claim 10 inserts or superimposes image message information on image data, and it is made to transmit to a transmitting partner as an advice means of the message information on a purport to suspend actuation. If it does in this way, the purport which suspends actuation can be visually notified to a communications partner. Especially since this does not need to check a call when the important call is being performed, for example, it is effective.
[0022] Furthermore, invention concerning claim 11 transmits the specific control code beforehand set up as an advice means of the message information on a purport to suspend actuation, corresponding to the message information on a purport that actuation is suspended to a communications partner, makes the message information corresponding to the above-mentioned control code generate in a communications partner by this, and it is made to make it output.
[0023] It becomes possible to notify the purport of a halt of operation for a short time efficiently moreover, without checking transmission of original voice data or image data compared with the case where a voice-told message and an image message are transmitted as it is, if it does in this way.
[0024]
[Embodiment of the Invention]
(Gestalt of the 1st operation) Drawing 1 is the circuit block diagram showing the configuration of the digital portable telephone which is the 1st operation gestalt of the dc-battery actuation mold communication device concerning this invention.
[0025] In this drawing, the radio transmission wave signal sent through the radio channel from the base station which is not illustrated is inputted into a receiving circuit (RX) 13 through the antenna common machine (DUP) 12, after being received by the antenna 11, and it is mixed with the receiving station

section oscillation signal outputted from 14 here, and frequency conversion is carried out to a received intermediate frequency signal. And after this received intermediate frequency signal is sampled in A/D converter 16 containing a low pass filter, it is inputted into the digital demodulator circuit (DEM) 17.
[0026] In the digital demodulator circuit 17, after the frame synchronization and the bit synchronization to the above-mentioned digital received intermediate frequency signal are established, digital recovery processing is performed. The digital recovery signal of the baseband obtained by this recovery processing is inputted into the time division multiple access circuit (TDMA) 18, and the separation extract of the time slot of addressing to self to every transmission frame is carried out here. In addition, the information on the frame synchronization obtained in the above-mentioned digital demodulator circuit 17 and a bit synchronization is inputted into a control circuit (CONT) 30.
[0027] The digital recovery signal outputted from the above-mentioned TDMA circuit 18 is continuously inputted into the error correcting code decoder circuit (CH-COD) 19, and error correction decode processing is carried out here. And this digital recovery signal by which error correction decode was carried out is inputted into the voice sign decoder circuit (SP-COD) 20, voice decryption processing is carried out, and, thereby, a digital receiver signal is reproduced. This digital receiver signal is supplied to a loudspeaker 22 through the voice amplifier which is not illustrated after being returned to an analog receiver signal with D/A converter 21, and a sound-reinforcement output is carried out from this loudspeaker 22.
[0028] On the other hand, a sound is collected with a microphone 23 and a speaker's transmission voice is changed into a transmission signal, and after being amplified by predetermined level with the transmission amplifier which is not illustrated further, it is inputted into A/D converter 24. And in this A/D converter 24, it is sampled with a predetermined sampling period, and is changed into the digital transmission signal which consists of a sample pulse train by this. After a sound echo is canceled by the echo canceller which is not illustrated, this digital transmission signal is inputted into the voice sign decoder circuit (SP-COD) 20, and voice coding is carried out here.
[0029] This digital transmission signal by which voice coding was carried out is inputted into the error correcting code decoder circuit (CH-COD) 19 with the control signal outputted from the control circuit 30, and is error-correcting-code-ized here. And this error-correcting-code-ized digital sending signal is inputted into the TDMA circuit 18. In this TDMA circuit 18, the transmission frame corresponding to a time division multiple access (TDMA) method is generated, and processing for inserting the above-mentioned digital sending signal in the time slot assigned to the self-equipment in this transmission frame is performed. The digital sending signal outputted from this TDMA circuit 18 is continuously inputted into the digital modulation circuit (MOD) 25.
[0030] this -- digital modulation -- a circuit -- 25 -- **** -- the above -- digital one -- a sending signal -- digital modulation -- carrying out -- having had -- transmission -- an intermediate frequency signal -- generating -- having -- this -- transmission -- an intermediate frequency signal -- a D/A converter -- 26 -- an analog signal -- changing -- having had -- after -- a sending circuit -- (-- TX --) -- 15 -- inputting -- having . In addition, as a digital modulation method, pi / 4 shift DQPSK (pi/4shifted, differentially encoded quadrature phase shift keying) method is used, for example.
[0031] In a sending circuit 15, the transmitted intermediate frequency signal by which the modulation was carried out [above-mentioned] is mixed with the sending-station section oscillation signal outputted from the frequency synthesizer 14, and, thereby, is changed into the radio transmission wave frequency corresponding to a wireless message channel. And this radio transmission wave signal is transmitted towards the base station which is not illustrated from an antenna 11 through the antenna common machine 12, after being controlled by transmitted power level predetermined with the transmitted power amplifier which is not illustrated.
[0032] Moreover, this portable telephone has the key input section (KEY) 31 and a display (DISP) 32, and these key input sections 31 and displays 32 are arranged on a control panel. Among these, a display 32 consists of a liquid crystal display with a back light.
[0033] Furthermore, the power circuit of this portable telephone is constituted as follows. Namely, 33 in drawing is the dc-battery 33 which used rechargeable batteries, such as a lithium ion battery, and is the

output voltage (battery voltage) V0 of this dc-battery 33. It is inputted into the electrical-potential-difference generation circuit 34. In this electrical-potential-difference generation circuit 34, it is the above-mentioned battery voltage V0. The stable operating voltage Vcc which each circuit section of telephone needs for a radical is generated, and this operating voltage Vcc is supplied to a control circuit 30 and a display 32 including a signal sender and receiver 10. Among these, switches 35 and 36 are inserted in the feed line to a signal sender and receiver 10 and a display 32. Opening and closing these switches 35 and 36 with the switch control signals S1 and S2 outputted from a control circuit 30, they control supply of the operating voltage Vcc to the above-mentioned signal sender and receiver 10 and a display 32.

[0034] Moreover, battery voltage V0 of the above-mentioned dc-battery 33 It is inputted into the electrical-potential-difference detector (V-DET) 37. This electrical-potential-difference detector 37 is the above-mentioned battery voltage V0. A value is detected, and it changes into digital value so that it can process in a control circuit 30. This digital value DS is incorporated in a control circuit 30.

[0035] by the way, a control circuit 30 is what was equipped with the microcomputer as the main control section, and is involved in communication link actuation as the control function -- various -- a control function -- in addition, it newly has dc-battery monitor / feed control function. This function is the battery voltage V0 detected by the above-mentioned electrical-potential-difference detector 37. That magnitude is judged by comparing with the thresholds TH1 and TH2 which set up digital value DS beforehand. While controlling the feed to a display 32 and a signal sender and receiver 10 according to the judgment result The informative-message information M1 on the purport that the remaining capacity of a dc-battery 33 fell is generated from the message generating section 38, and this informative-message information M1 is notified to the speaker of this portable telephone, and the speaker of a communications partner, respectively.

[0036] Next, dc-battery monitor / feed control action of the portable telephone constituted as mentioned above is explained according to the control procedure of a control circuit 30. Drawing 2 is a flow chart which shows the control procedure and the content of control.

[0037] It is the battery voltage V0 with which the control circuit 30 was detected by the electrical-potential-difference detector 37 in step 2a during the period which is communicating with other portable telephones or a wire telephone machine through the radio channel. Digital value DS is incorporated periodically. And it sets to step 2b and step 2c, and is this battery voltage V0. Digital value DS is compared with thresholds TH1 and TH2. It is battery voltage V0 temporarily now. If digital value DS is higher than any of each thresholds TH1 and TH2, it is battery voltage V0. It judges that it is normal and returns to control of an and also [it is the need] during communication link periods, such as call control.

[0038] Now, consumption of a dc-battery 33 progresses in this condition, and it is that electrical-potential-difference value V0. Suppose that it became TH1<DS<TH2. If it does so, a control circuit 30 will generate the low-battery message information M1 that it means that shifted to step 2d and battery voltage fell from the message generating section 38 here. If it does so, this message information M1 will be superimposed by the receiver voice signal, and a sound-reinforcement output will be carried out from a loudspeaker 22 while a transmission signal is overlapped in the voice sign decoder circuit 20 and transmitted towards a call partner. In addition, as the above-mentioned low-battery message, the residue of "dc-battery decreased, for example. it becomes impossible to talk over the telephone soon " -- it is used.

[0039] Then, after transmission and the sound-reinforcement output of a low-battery message are completed, a control circuit 30 generates the switch control signal S1 in step 2e, and makes a switch 36 turn off. The feed to a display 32 is severed by this, and, as a result, the back light of a display 32 is switched off. Therefore, the power consumption of a portable telephone is controlled and, thereby, the remaining time of a portable telephone is extended.

[0040] When feed to a display 32 is made into **, a control circuit 30 is the battery voltage V0 return to step 2a and according to step 2b and 2c. The judgment of digital value DS is continued. And battery voltage V0 If it falls further and is set to TH1>DS, clear back control for [beyond this] judging that

communicative continuation is difficult, shifting to step 2f, cutting a radio channel here, and returning to a waiting condition will be performed. And the switch control signal S2 is outputted by step 2g, a switch 35 is made off, and, thereby, feed to a signal sender and receiver 10 is made into **.

[0041] As mentioned above in the portable telephone of the gestalt of this operation It is battery voltage V0 during a communication link. It supervises by comparing a value with thresholds TH1 and TH2, and is battery voltage V0. When digital value DS serves as TH1<DS<TH2 While notifying a call partner by superimposing low-battery message information on a transmission sound signal, and transmitting It remains considering the feed to a display 32 as **, and extension of a time is aimed at, and it is battery voltage V0. After performing clear back processing, he is trying to sever the feed to a signal sender and receiver 10, when digital value DS turns into TH1>DS.

[0042] Therefore, according to the gestalt of this operation, the message of the purport battery voltage falls and it becomes impossible to use soon will be notified also to a call partner's speaker as opposed to the user of this portable telephone, and thereby, a phase sign language person can know clearly the condition of the portable telephone which is the call partner of self, before becoming a communication interruption. For this reason, even if it becomes a communication interruption, that cause not being known but memorizing puzzlement and displeasure is lost.

[0043] Moreover, it is battery voltage V0 in that case. Since it was made to notify the low-battery message when it fell to two or less threshold TH set up more highly than this threshold TH1, without waiting until it fell to the threshold TH1 which is the minimum actuation guarantee electrical-potential-difference value of a portable telephone, the notification action of a low-battery message can be performed certainly.

[0044] Furthermore, since the feed to a display 32 was severed with advice of the above-mentioned low-battery message, the probability which that of the power consumption by the back light of a display 32 can be lost, can be made to extend the remnant service life of the part dc-battery, remains by this, extends a time, and can complete a call henceforth increases.

[0045] (Gestalt of the 2nd operation) Drawing 3 is the circuit block diagram showing the configuration of the image record regenerative apparatus with a visual telephone function which is the gestalt of operation of the 2nd of the dc-battery actuation mold communication device concerning this invention.

[0046] In this drawing, the video signal and sound signal which came from communications-partner equipment through the subscriber line 40 of a public network into the visual telephone are inputted into the receiving signal-processing section 42 through the line connection control section 41. In the receiving signal-processing section 41, a recovery and decode processing of the above-mentioned video signal and a sound signal are performed, and, thereby, the receiving video signal and receiver voice signal of baseband are reproduced. And among this reproduced baseband signaling, a receiver voice signal is supplied to a loudspeaker 44 through a circuit changing switch 43, and a sound-reinforcement output is carried out from this loudspeaker 44. On the other hand, a receiving video signal is supplied to a display (DISP) 47 respectively through an adder 45 and a circuit changing switch 46, and is displayed on this display 47. A display 47 consists of a backlit liquid crystal display and its actuation circuit.

[0047] On the other hand, the transmission sound signal outputted from the transmitting video signal and microphone 48 which were outputted from the image pick-up section 50 into the visual telephone is inputted into the sending-signal processing section 49, respectively. In the sending-signal processing section 49, predetermined coding processing and a predetermined modulation required in order to transmit to a subscriber line to the above-mentioned transmitting video signal and a transmission sound signal are performed, and the transmitting image and sound signal generated by this are transmitted to a subscriber line 40 through the line connection control section 41.

[0048] The sound signal outputted on the other hand from the video signal outputted from the image pick-up section 50 during image record and the microphone 48 is inputted into the record playback section 51, respectively. The record playback section 51 is what used semiconductor memory, the magneto-optic disk, and DVD (Digital video disk) as a record medium, and memorizes the above-mentioned video signal and a sound signal, respectively.

[0049] Moreover, the video signal by which reading appearance was carried out from the above-

mentioned record playback section 51 during image reproduction is supplied to a display 47 through a circuit changing switch 46, and is displayed on this display 47. Moreover, the sound signal by which reading appearance was carried out with the above-mentioned video signal from the above-mentioned record playback section 51 is supplied to a loudspeaker 44 through a circuit changing switch 43, and a sound-reinforcement output is carried out from this loudspeaker 44.

[0050] By the way, the power circuit section of this image record regenerative apparatus is constituted as follows. Namely, 52 in drawing is the dc-battery which used rechargeable batteries, such as a lithium ion battery, and is the output voltage (battery voltage) V0 of this dc-battery 52. It is inputted into the electrical-potential-difference generation circuit 53. This electrical-potential-difference generation circuit 53 is the above-mentioned battery voltage V0. The stable operating voltage Vcc which each circuit section of equipment needs for a radical is generated, and this operating voltage Vcc is supplied to the feed control section 54. The feed control section 54 builds in three switches which carry out an on-off action according to the judgment signal S3 supplied from the residue judging section 55 mentioned later, and after it divides the above-mentioned operating voltage Vcc into three lines, it outputs them through the above-mentioned switch. the output destination change -- Vc2 -- the image pick-up section 50 -- moreover, Vc3 is set as a display 47 and Vc1 is further set as each other circuit sections, respectively.

[0051] Moreover, battery voltage V0 of the above-mentioned dc-battery 52 It is inputted into the residue judging section 55. This residue judging section 55 is the above-mentioned battery voltage V0. The magnitude of an electrical-potential-difference value is judged [two thresholds TH1 and TH2 which have set up the value beforehand / respectively], and the judgment signal S3 showing that judgment result is supplied to the above-mentioned feed control section 54 and the message generating section 56.

[0052] According to the judgment signal S3 supplied from the above-mentioned residue judging section 55, when battery voltage falls, the message generating section 56 generates the message information for notifying a call partner of suspending image pick-up actuation, and supplies it to the sending-signal processing section 49. Moreover, with it, the message information for telling the user of this equipment about suspending image pick-up actuation is generated, and an adder 45 is supplied. An adder 45 superimposes this message information on the receiving video signal outputted from the receiving signal-processing section 42, and is made to supply and display it on a display 47.

[0053] Next, dc-battery monitor / feed control action in the equipment constituted as mentioned above is explained. The transmission sound signal inputted into the video signal and microphone 48 which were picturized in the image pick-up section 50, and were obtained between the visual telephone equipment of the communications partner which is not illustrated through the subscriber line 40 in the period which is performing the visual telephone communication link is transmitted to a subscriber line 40 through the line connection control section 41, after signal processing required for telephone communications, such as coding and a modulation, in the sending-signal processing section 49 is performed.

[0054] On the other hand, the video signal and sound signal which came through the subscriber line 40 from the visual telephone equipment of a communications partner are inputted into the receiving signal-processing section 42 through the line connection control section 41, recovery and decode processing are performed here, and the video signal and sound signal of baseband are reproduced. And among these, a video signal is inputted into a display 47 through an adder 45 and a circuit changing switch 46, and is displayed on this display 47. Moreover, a sound signal is supplied to a loudspeaker 44 through a changeover switch 43, and a sound-reinforcement output is carried out from this loudspeaker 44.

[0055] In this condition, the monitor and feed control of a dc-battery residue are performed in the power circuit section. Namely, output voltage V0 of a dc-battery 52 It is inputted into the residue judging section 55, and is compared with two thresholds TH1 and TH2 set up beforehand here, respectively. And battery voltage V0 If larger than any of each thresholds TH1 and TH2, it is battery voltage V0. Since it is normal, the judgment signal S3 is not outputted. For this reason, to each circuit section, feed is performed as before from the feed control section 54. Moreover, a message is not generated from the message generating section 56.

[0056] In addition, the residue of a dc-battery 52 generates the message which shows a certain thing

enough, or the message showing a residue, and you may make it display this message on a display 47 from the message generating section 56 at this time.
[0057] Now, a dc-battery 52 is exhausted temporarily now and it is battery voltage V0. Suppose that it fell to TH1<V0 <TH2. If it does so, from the residue judging section 55, the judgment signal S3 which shows the above-mentioned judgment result will be generated. for this reason -- from the message generating section 56 -- for example, the residue of "dc-battery decreased -- transmission of an image is suspended soon -- " -- a residue lowering message [like] is generated and this message is supplied to the sending-signal processing section 49. For this reason, in the sending-signal processing section 49, the above-mentioned residue lowering message is superimposed or inserted in a transmitting video signal, and it is transmitted towards the visual telephone equipment of a communications partner. Therefore, the speaker of a communications partner can know the condition of communications-partner equipment by seeing the above-mentioned residue lowering message displayed on the display of self equipment.
[0058] In addition, the above-mentioned residue lowering message may be made into a speech synthesis message, this message may be inserted or superimposed on a transmission sound signal in the sending-signal processing section 49, and you may transmit to a communications partner. If it does in this way, the speaker of a communications partner can know the condition of communications-partner equipment by the speech synthesis message by which the sound-reinforcement output was carried out from the self earphone.
[0059] Moreover, the message for the speakers of self equipment is also generated from the above-mentioned message generating section 56. After this message is compounded by receiving image data with an adder 45, it is displayed on a display 47. For this reason, a speaker can know the condition of self equipment by checking by looking the above-mentioned message displayed on the display 47.
[0060] On the other hand, if the judgment signal S3 is generated from the above-mentioned residue judging section 55, the feed control section 54 will stop the feed of operating voltage Vc2 to the image pick-up section 50, after time amount (for example, several seconds - 10 seconds) required for the information of the above-mentioned residue lowering message passes.
[0061] Then, electrical-potential-difference value V0 of a dc-battery 52 after performing the information of a residue lowering message, and a feed halt to the image pick-up section 50 If it falls further and is set to V0 <TH1, the judgment signal S3 with which the above-mentioned judgment result is expressed from the residue judging section 55 will be outputted. For this reason, the feed control section 54 already stops feed of the operating voltage Vc1 and Vc3 to other circuit sections except the image pick-up section 50 under feed halt.
[0062] According to the gestalt of this operation, in the residue judging section 55, the remaining capacity of a dc-battery 52 is judged in a visual telephone as mentioned above. Battery voltage V0 When it falls rather than a threshold TH2, a residue lowering message is generated from the message generating section 56. Since this message is superimposed or inserted in a transmitting video signal or a transmission sound signal and it was made to transmit to a communications partner, the speaker of a communications partner can know the condition of communications-partner equipment by the above-mentioned residue lowering message. For this reason, even if a receiving image serves as ** after that, that cause not being known but memorizing puzzlement and displeasure is lost.
[0063] Moreover, since it was made to make feed to the image pick-up section 50 into ** after the information of a residue lowering message Consumption of the power by the future image pick-up sections 50 can be lost, and the power consumption of equipment can be reduced. The probability which can be made to extend the battery life of a period until a dc-battery 52 falls to one or less threshold TH and becomes activity impossible by this, remains by this, extends a time, and can complete a call can be raised.
[0064] (Gestalt of the 3rd operation) Drawing 4 is the circuit block diagram showing the configuration of the image record regenerative apparatus with a visual telephone function which is the gestalt of operation of the 3rd of the dc-battery actuation mold communication device concerning this invention.
[0065] In this drawing, the video signal and sound signal which came from communications-partner

equipment through the subscriber line 60 of a public network into the visual telephone are inputted into the receiving signal-processing section 63 through the line connection control section 62 of the transceiver section 61. In the receiving signal-processing section 63, a recovery and decode processing of the above-mentioned video signal and a sound signal are performed, and it is further changed into a digital signal. And this digital receiver voice signal and a digital video signal are inputted into a control section 70, respectively.

[0066] In a control section 70, processing for voice outputs, such as selection of a signal and insertion, and graphic display is performed to the above-mentioned digital receiver voice signal and a digital receiving video signal, respectively. After the digital receiver voice signal after this processing is changed into an analog signal with D/A converter 72 of the hand set section 71, the sound-reinforcement output of it is carried out from a loudspeaker 73. Graphic display of the digital receiving video signal is supplied and carried out to a display (DISP) 82. A display 82 consists of a backlit liquid crystal display and its actuation circuit. Moreover, the above-mentioned digital receiver voice signal and a digital receiving video signal are supplied to the record playback section 83, and are memorized by this record playback section 83. The record playback section 83 uses semiconductor memory, a magneto-optic disk, and DVD (Digital video disk) as a record medium.

[0067] On the other hand, after the transmission sound signal outputted from the transmitting video signal and microphone 74 which were outputted from the image pick-up section 80 is changed into a digital signal with A/D converters 81 and 75, respectively, it is inputted into a control section 70. In a control section 70, processing for transmission of selection of a signal, insertion, etc. or record is performed to the above-mentioned digital transmitting video signal and a digital transmission sound signal, respectively. And the digital transmitting video signal and digital transmission sound signal after this processing are inputted into the sending-signal processing section 64 of the transceiver section 61, and after signal processing for transmission, such as coding and a modulation, is performed here, they are transmitted to a subscriber line 60 through the line connection control section 63. Moreover, from a control section 70, the digital transmitting video signal and digital transmission sound signal after the above-mentioned processing are supplied to the record playback section 83, and are memorized.

[0068] Output voltage V0 of a dc-battery 90 (battery voltage) It is inputted into the electrical-potential-difference generation circuit 91. This electrical-potential-difference generation circuit 91 is the above-mentioned battery voltage V0. The stable operating voltage Vcc which each circuit section of equipment needs for a radical is generated, and this operating voltage Vcc is supplied to the feed control section 92. The feed control section 92 builds in four switches which carry out an on-off action according to feed control signal S4 generated from the control section 70 mentioned later, and after it divides the above-mentioned operating voltage Vcc into four lines, it supplies them to each circuit section through the above-mentioned switch. The record playback section 83 and Vc3 are set as the image pick-up section 80, and, as for the supply place, Vc4 is set [Vc1] as the display 82 for the transceiver section 61 and Vc2, respectively.

[0069] Moreover, battery voltage V0 of the above-mentioned dc-battery 90 It is inputted into the electrical-potential-difference detector (V-DET) 93. The electrical-potential-difference detector 93 is the above-mentioned battery voltage V0. A value is detected, and it changes into digital value so that it can process by the control section 70. This digital value DS is incorporated by the control section 70.

[0070] by the way, a control section 70 is what was equipped with the microcomputer as the main control section, and is involved in communication link actuation as the control function -- it is variously involved in a control function and record playback actuation -- various -- a control function -- in addition, it newly has dc-battery monitor / feed control function.

[0071] This dc-battery monitor / feed control function is the battery voltage V0 detected by the above-mentioned electrical-potential-difference detector 93. That magnitude is judged by comparing with the thresholds TH1, TH2, and TH3 which set up digital value DS beforehand. And the informative-message information on the purport that the remaining capacity of a dc-battery 33 fell according to that judgment result is generated, and this informative-message information is reported to the speaker of this equipment, and the speaker of a communications partner, respectively.

[0072] Moreover, by directing to the feed control section 92, on-off control of the feed to a display 82, the image pick-up section 80, the transceiver section 61, and the record playback section 83 is carried out. Furthermore, while memorizing the receiving video signal it became impossible to display on the record playback section 83, the alternative image information memorized beforehand is read from the record playback section 83, and a communications partner is made to turn and transmit this alternative image information instead of a transmitting video signal after a display-action halt and an image pick-up actuation halt.
[0073] Next, dc-battery monitor / feed control action of the image record regenerative apparatus with a visual telephone function constituted as mentioned above is explained according to the control procedure of a control section 70. It is the battery voltage V0 detected by the electrical-potential-difference detector 93 in step 5a in the visual telephone as a control section 70 was shown at drawing 5 . Digital value DS is incorporated periodically. And it sets to steps 5b, 5c, and 5d, and is this battery voltage V0. Digital value DS is compared with thresholds TH1, TH2, and TH3.
[0074] Now battery voltage V0 For digital value DS, if higher than any of each thresholds TH1, TH2, and TH3, a control section 70 is battery voltage V0. It judges that it is normal and returns to control of an and also [it is the need] during communication link periods, such as call control.
[0075] Now, the remaining capacity of a dc-battery 90 decreases in this condition, and suppose that that output voltage value V0 fell rather than the threshold TH3, and became TH2<DS<TH3 as shown in drawing 6 .
[0076] If it does so, as shown in drawing 7 , a control section 70 will give directions first to the feed control section 92 by step 7a, will supply operating voltage Vc2 to the record playback section 83, and, thereby, will start the record playback section 83. Next, the display off message which tells stopping the display action of a receiving image by step 7b is created, this display off message is inserted in a transmitting sound signal by step 7c, and it is made to transmit towards a communications partner from the sending-signal processing section 64. In addition, as a display off message, "since the remaining capacity of a dc-battery fell, the display of a receiving image becomes impossible henceforth" is used.
[0077] For this reason, from the earphone of a communications partner, the above-mentioned display off-message is outputted in the condition of having been inserted in the receiver voice, and a phase sign language person can know that the image which self transmitted in the equipment of a communications partner after a while by this message will no longer be displayed.
[0078] Moreover, with it, a control section 70 inserts a display off message in a receiver voice signal in step 7d, and carries out a sound-reinforcement output from a loudspeaker 73. For this reason, the speaker of this equipment can also know turning off the display of a receiving image henceforth by consumption of a dc-battery by the above-mentioned display off-message.
[0079] Then, after ending information control of a display off-message, a control section 70 is the battery voltage V0 which gives directions to the feed control section 92 in step 7e, makes ** feed of operating voltage Vc4 to a display 82, and is shown in drawing 5 . It returns to a monitor. Therefore, henceforth, although the display action of the receiving image in a display 82 is no longer performed, from a control section 70, this receiving video signal is led to the record playback section 83, and is memorized instead. For this reason, after completing a call and exchanging dc-batteries, by reproducing the above-mentioned receiving image from the record playback section 83, a speaker cannot leak the receiving image sent from the communications partner, and can check it.
[0080] Next, electrical-potential-difference value V0 of a dc-battery 90 Suppose that it fell further and became TH1<DS<TH2. When it does so, a control section 70 creates the image pick-up off-message which means suspending image pick-up actuation henceforth in step 8a, inserts this image pick-up off-message in a transmission sound signal by step 8b, and makes it transmit towards a communications partner from the sending-signal processing section 64, as shown in drawing 8 .
[0081] In addition, as an image pick-up off message, the remaining capacity of for example, "dc-battery decreased further. transmission of an image becomes impossible henceforth " -- it is used.
[0082] For this reason, from the earphone of a communications partner, the above-mentioned image pick-up off-message is outputted with a receiver voice, and a phase sign language person can know in

advance that transmission of the image from the equipment of a communications partner will be henceforth suspended by this message.
[0083] Moreover, with it, a control section 70 inserts an image pick-up off message in a receiver voice signal in step 8c, and carries out a sound-reinforcement output from a loudspeaker 73. For this reason, the speaker of this equipment can also know that transmission of an image will be henceforth suspended by consumption of a dc-battery by the above-mentioned image pick-up off-message.
[0084] Then, after ending information control of an image pick-up off-message, a control section 70 reproduces the alternative image information beforehand memorized from the record playback section 83 in step 8d, and makes this alternative image information transmit to the equipment of a communications partner instead of the video signal from the image pick-up section 80. For this reason, the above-mentioned alternative image will be displayed on the display of communications-partner equipment, and a phase sign language person's insecurity is mitigated. In addition, as alternative image information, the speaker image picturized, for example during the time of initiation of this communication link or a communication link, scenery, a test image which were memorized beforehand, etc. are used. Moreover, into these alternative images, the above-mentioned image pick-up off message may be inserted fixed in that case.
[0085] Finally a control section 70 is the battery voltage V0 which gives directions to the above-mentioned feed control section 92 in step 8e, makes ** feed of operating voltage Vc3 to the image pick-up section 80, and is shown in drawing 5 . It returns to a monitor. Therefore, the image pick-up actuation by the image pick-up section 80 stops henceforth.
[0086] And as shown in drawing 6 , it is battery voltage V0. If it falls further and is set to TH1>DS A control section 70 shifts to step which judges that communicative continuation is difficult and is shown in drawing 9 from step 5d of drawing 5 9beyond this a. Create a communication link end message here, this message is made to turn and transmit to a communications partner from the sending-signal processing section 64 by step 9b, and this tells a phase sign language person about communication link termination. Moreover, with it, in step 9c, the sound-reinforcement output of the above-mentioned communication link end message is carried out from a loudspeaker 73, and this tells communication link termination to the speaker of self-equipment.
[0087] And if it checks that fixed time amount required for the information of the above-mentioned communication link end message has passed in step 9d, a control section 70 shifts to step 9e, gives disconnect indication to the line connection control section 62 here, will make a subscriber line 60 cut, will give directions to the feed control section 92 at the appropriate after step f, and will make ** supply of the operating voltage Vc1 and Vc2 to the transceiver section 61 and the record playback section 83.
[0088] With the image record regenerative apparatus with a visual telephone function of the gestalt of this operation, it is battery voltage V0 in a visual telephone as mentioned above. It supervises by comparing a value with thresholds TH1, TH2, and TH3, and is battery voltage V0 first. When digital value DS serves as TH2<DS<TH3, after generating a display off-message and notifying to a communications partner, feed to a display 82 is made into **. And it is battery voltage V0 next. When digital value DS falls further and serves as TH1<DS<TH2, after generating an image pick-up off message and notifying to a communications partner, feed to the image pick-up section 80 is made into **. It is battery voltage V0 to the last. When digital value DS falls further and turns into TH1>DS, after notifying a communication link end message to a communications partner, he performs clear back processing, and is trying to sever the feed to the appropriate back transceiver section 61 and the record playback section 83.
[0089] Therefore, according to this equipment, it is battery voltage V0. Since the feed to a display 82, the image pick-up section 80, the transceiver section 61, and the record playback section 83 serves as ** one by one in the process of that lowering when it falls, the probability which can be made to extend the remnant service life of a dc-battery, remains by this, extends a time, and can complete a call can be raised.
[0090] Moreover, since a display off-message, an image pick-up off-message, and a communication link end message are created in advance and the speaker of a communications partner is notified in case the

above-mentioned feed is made into ** one by one, a phase sign language person can grasp accurately change of the operating state of the partner equipment accompanying consumption of a dc-battery 90 in advance by advice of these messages. For this reason, even if change of operating state arises, a cause not being known but memorizing puzzlement and displeasure is lost.

[0091] He is trying to memorize a receiving video signal in the record playback section 83 instead of this display action after a halt of a display 82 of operation with the gestalt of this operation furthermore. for this reason, the video signal with which the speaker of self-equipment was received during the display-action halt period -- the need -- responding -- a connoisseur -- it can reproduce and see after termination, and it cannot leak and the image information sent by the partner by this can be checked. Moreover, he reproduces the alternative image beforehand memorized from the record playback section 82 instead of the image pick-up image after the halt of the image pick-up section 80 of operation, and is trying to transmit to a communications partner. For this reason, a phase sign language person can see an alternative image, even if image pick-up actuation of partner equipment stops, and fear of this taking equipment for failure disappears.

[0092] (Gestalt of the 4th operation) the part accompanying lowering or it of the remaining capacity of a dc-battery in the gestalt of this operation -- in case a halt of operation is notified to a communications partner, the specific control code beforehand decided to be a message-sending side between communication devices is transmitted, this control code is received in a message receiving side, the message corresponding to this code is created, and it is made to display on a display

[0093] Drawing 10 is the circuit block diagram showing the important section configuration of the image record regenerative apparatus with a visual telephone function concerning the gestalt of implementation of the 4th of this invention. In addition, in this drawing, the same sign is given to the same part as said drawing 4 , and detailed explanation is omitted.

[0094] The equipment by the side of message sending is battery voltage V0. If it falls rather than a threshold, in a control section 70, the control code which matched with the message by control-code generating means 70a, and was defined beforehand will be generated, this control code will be inserted or superimposed on a transmitting video signal or a transmission sound signal by code insertion means 70b, and it will transmit to a subscriber line 40 through the line connection control section 63 from the sending-signal processing section 64.

[0095] On the other hand, in a control section 70, the equipment of a message receiving side extracts a control code out of a receiving video signal or a receiving sound signal by control-code extract means 70c, and generates a message [/ based on this control code] by 70d of message generating means. And this message is inserted in a receiving video signal as a telop by message insertion means 70e, and it is made to display on a display 82.

[0096] Moreover, the purport of a halt of operation can be notified in a short time efficiently, without checking transmission of original voice data or image data compared with the case where a voice-told message and an image message are transmitted as it is, since with such a configuration it replaces with a message and a control code is transmitted.

[0097] In addition, this invention is not limited to the gestalt of each above-mentioned implementation. For example, in case the message of a purport which suspends actuation is transmitted, the remaining capacity or the remaining time of a dc-battery in this event is computed, this calculation value is combined, and you may make it transmit.

[0098] Moreover, although ****** [as opposed to a display 82 at the gestalt of the 3rd operation] and ****** to the image pick-up section 80 were independently performed corresponding to different thresholds TH3 and TH2, it matches with a threshold TH3 or TH2, and may be made to carry out simultaneously. In this case, what is necessary is just to set up the content of the informative message suitably according to the object of the above-mentioned ******.

[0099] Furthermore, as long as the communication link continues not only 1 time but after being made to carry out multiple-times repeat transmission and a dc-battery residue's falling below to a predetermined value, current-events **** detection of the lowering of a dc-battery residue is carried out, and you may make it notify a message.

[0100] In addition, also with the relation between the transmit timing of the number of phases of the class of equipment, or the threshold for that configuration and lowering detection of a dc-battery residue, the content of the informative message and its transmission system, and a communication message, and the timing of ******, and the function set as the object of ******, in the range which does not deviate from the summary of this invention, it deforms variously and can carry out.

[0101]

[Effect of the Invention] As explained in full detail above, according to this invention, the remaining capacity of a dc-battery is detected during communication link actuation. By having notified the message information on the purport that the dc-battery residue fell to the communications partner, when it fell rather than this detected threshold that it remained and capacity set up beforehand When lowering of a dc-battery residue arises, the user of communications-partner equipment can know that and the dc-battery actuation mold communication device which enabled this to mitigate puzzlement of a partner user and displeasure can be offered.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates a dc-battery to the communication device of the dc-battery actuation mold which performs communication link actuation at least as a power source like the pocket mold personal computer equipped with a portable telephone or communication facility, and a pocket mold image record regenerative apparatus with a visual telephone function.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] Generally, the electronic equipment of the pocket mold which operates considering a dc-battery as a power source has dc-battery residue lowering detection and a display function. This function detects the remaining capacity of a dc-battery by supervising battery voltage etc., while using a device, when the remaining capacity falls rather than this threshold as compared with the threshold which set up the remaining capacity of this dc-battery beforehand, it displays the mark showing residue lowering of a dc-battery on the display of a device, or generates singing from a sounder etc., and, thereby, reports residue lowering of a dc-battery to a user.

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained in full detail above, according to this invention, the remaining capacity of a dc-battery is detected during communication link actuation. By having notified the message information on the purport that the dc-battery residue fell to the communications partner, when it fell rather than this detected threshold that it remained and capacity set up beforehand When lowering of a dc-battery residue arises, the user of communications-partner equipment can know that and the dc-battery actuation mold communication device which enabled this to mitigate puzzlement of a partner user and displeasure can be offered.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, since such conventional dc-battery residue lowering detection and display capabilities were what reports lowering of a dc-battery residue only to the user of the device to the last, they had the following troubles.
[0004] That is, recently, the pocket device equipped with communication facility like the portable telephone or the personal computer is beginning to spread, and the pocket mold electronic equipment of an image record regenerative apparatus further with a visual telephone function etc. new type is also going to be developed. However, when the conventional dc-battery residue lowering detection and display capabilities mentioned above to these devices are given as it was, surely lowering of a dc-battery residue is reported to the user of the device by the dc-battery residue lowering display, but the speaker of a communications partner cannot know lowering of the dc-battery residue of a communications-partner device, unless that is separately told by oral etc. from a phase sign language person. For this reason, it was in the middle of the communication link, and even if the communication link condition changed or it became a communication interruption again, that cause might not be found, but puzzlement and displeasure might be memorized, and it was not very desirable.
[0005] The user of communications-partner equipment enables it to get to know that, and the place which this invention was made paying attention to the above-mentioned situation, and is made into that object is to offer the dc-battery actuation mold communication device which enabled this to mitigate puzzlement of a partner user and displeasure, when lowering of a dc-battery residue arises.

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MEANS

[Means for Solving the Problem] In order to attain the above-mentioned object, invention concerning claim 1 In the dc-battery actuation mold communication device which performs communication link actuation for a dc-battery at least as a power source The dc-battery residue detection means for detecting the remaining capacity of the above-mentioned dc-battery, When it falls rather than the threshold which established the advice means of a dc-battery condition, and was detected by the above-mentioned dc-battery residue detection means during communication link actuation and which it remained and capacity set up beforehand The message information on the purport that the dc-battery residue fell with the above-mentioned advice means of a dc-battery condition is notified to a communications partner.
[0007] Therefore, according to this invention, a user becomes possible [getting to know certainly dc-battery residue lowering of communications-partner equipment] from a communications partner by the dc-battery residue lowering message notified automatically, even if lowering of a dc-battery residue is not told by oral etc. from the speaker of a communications partner.
[0008] Moreover, invention concerning claim 2 notifies the message information on a purport that the actuation concerning the communication link concerned is stopped with the advice means of a halt of operation to a communications partner in advance of a halt of the actuation concerning this communication link, when falling during communication link actuation rather than the threshold which the remaining capacity of a dc-battery set up beforehand and stopping the actuation concerning a communication link according to this.
[0009] If it does in this way, a user will become possible [getting to know dc-battery residue lowering of communications-partner equipment by the dc-battery residue lowering message notified from communications-partner equipment], before the actuation concerning a communication link is suspended with lowering of a dc-battery residue in communications-partner equipment. For this reason, even if the actuation concerning a communication link stops in communications-partner equipment during a communication link, it becomes possible to grasp that cause in advance, and the nonconformity which memorizes puzzlement and displeasure by this is mitigated.
[0010] furthermore, invention concerning claim 3 -- a communication link -- the part fall rather than the threshold which the remaining capacity of a dc-battery set up beforehand working, and excluding communication link actuation among two or more actuation according to this -- the case where actuation is stopped by the halt control means of operation -- this part -- a halt of operation -- preceding -- the advice means of a halt of operation -- the part concerned -- the message information on a purport stop actuation makes notify to a communications partner
[0011] thus, the part accompanying [when it carries out] dc-battery residue lowering of communications-partner equipment in a user -- a halt of operation -- beforehand -- moreover -- this part -- even if it becomes possible to get to know clearly by the message which expressed a halt of operation directly and actuation stops in part with communications-partner equipment by this, memorizing puzzlement and displeasure to this decreases.
[0012] Furthermore, while invention concerning claim 4 performs transceiver actuation of voice data between communications partners and transmitting the image data picturized by the image pick-up

means to a communications partner It is in the equipment which performs actuation which receives the image data sent from the communications partner, and is displayed on a display means. When the remaining capacity of a dc-battery falls rather than the threshold set up beforehand, it is made to stop the display action of the receiving image data in the above-mentioned display means, and the message information on to that effect is notified to a communications partner in advance of a halt of the display action of a parenthesis.

[0013] thus, the thing for which the image which the user has transmitted from self equipment will no longer be expressed as communications-partner equipment if it carries out -- beforehand -- and it becomes possible to get to know clearly. For this reason, it becomes possible to perform the suitable response of telling henceforth the information on the map which was carrying out image transmission till then, for example, a photograph, etc. orally.

[0014] Furthermore, when the remaining capacity of a dc-battery falls rather than the threshold set up beforehand, it is made for invention concerning claim 5 to suspend the image pick-up actuation in an image pick-up means instead of a halt of the above-mentioned display action, and it notifies the message information on to that effect to a communications partner in advance of a halt of the above-mentioned image pick-up actuation.

[0015] If it does in this way, even if he becomes ** while the image which had come from communications-partner equipment communicates, a user becomes possible [getting to know the reason clearly in advance], and he can continue the communication link with voice, without this memorizing puzzlement etc. also after that.

[0016] furthermore, when the remaining capacity of a dc-battery falls rather than the threshold set up beforehand, it is made for invention concerning claim 6 to suspend simultaneous or gradually the display action of the receiving image data in a display means, and the image pick-up actuation in an image pick-up means, and it notifies the message information on to that effect to a communications partner in advance of the above-mentioned display action and a halt of each above-mentioned image pick-up actuation.

[0017] If it does in this way, it will become possible [a user] to know clearly in advance that the image transmitted from self equipment is no longer expressed as communications-partner equipment, and becoming ** while the image which had come from communications-partner equipment communicates, and the communication link with voice can be continued, without this memorizing puzzlement etc.

[0018] Moreover, invention concerning claim 7 memorizes in memory the image data sent from the communications partner instead of the display action after the display-action halt of the above-mentioned receiving image data. If it does in this way, it becomes possible to reproduce the image data memorized in memory after communication link termination, and to check the content, and informational loss can be prevented.

[0019] Furthermore, invention concerning claim 8 reads the image data memorized beforehand to memory, and it is made to transmit to a communications partner after a halt of the above-mentioned image pick-up actuation. If it does in this way, sending the image of the speaker who memorized before the image pick-up halt, for example to the user of communications-partner equipment can be continued as still picture data, and the nonconformity from which image data serve as ****** thoroughly by this will be prevented.

[0020] Moreover, invention concerning claim 9 inserts or superimposes voice-told message information on voice data, and it is made to transmit to a transmitting partner as an advice means of the message information on a purport to suspend actuation. If it does in this way, the purport which suspends actuation can be notified to a communications partner in acoustic sense. For this reason, even when the partner user is not looking at the receiving image, it becomes possible to notify certainly the purport which suspends actuation to a partner user.

[0021] Furthermore, invention concerning claim 10 inserts or superimposes image message information on image data, and it is made to transmit to a transmitting partner as an advice means of the message information on a purport to suspend actuation. If it does in this way, the purport which suspends actuation can be visually notified to a communications partner. Especially since this does not need to

check a call when the important call is being performed, for example, it is effective.
[0022] Furthermore, invention concerning claim 11 transmits the specific control code beforehand set up as an advice means of the message information on a purport to suspend actuation, corresponding to the message information on a purport that actuation is suspended to a communications partner, makes the message information corresponding to the above-mentioned control code generate in a communications partner by this, and it is made to make it output.
[0023] It becomes possible to notify the purport of a halt of operation for a short time efficiently moreover, without checking transmission of original voice data or image data compared with the case where a voice-told message and an image message are transmitted as it is, if it does in this way.
[0024]
[Embodiment of the Invention]
(Gestalt of the 1st operation) Drawing 1 is the circuit block diagram showing the configuration of the digital portable telephone which is the 1st operation gestalt of the dc-battery actuation mold communication device concerning this invention.
[0025] In this drawing, the radio transmission wave signal sent through the radio channel from the base station which is not illustrated is inputted into a receiving circuit (RX) 13 through the antenna common machine (DUP) 12, after being received by the antenna 11, and it is mixed with the receiving station section oscillation signal outputted from 14 here, and frequency conversion is carried out to a received intermediate frequency signal. And after this received intermediate frequency signal is sampled in A/D converter 16 containing a low pass filter, it is inputted into the digital demodulator circuit (DEM) 17.
[0026] In the digital demodulator circuit 17, after the frame synchronization and the bit synchronization to the above-mentioned digital received intermediate frequency signal are established, digital recovery processing is performed. The digital recovery signal of the baseband obtained by this recovery processing is inputted into the time division multiple access circuit (TDMA) 18, and the separation extract of the time slot of addressing to self to every transmission frame is carried out here. In addition, the information on the frame synchronization obtained in the above-mentioned digital demodulator circuit 17 and a bit synchronization is inputted into a control circuit (CONT) 30.
[0027] The digital recovery signal outputted from the above-mentioned TDMA circuit 18 is continuously inputted into the error correcting code decoder circuit (CH-COD) 19, and error correction decode processing is carried out here. And this digital recovery signal by which error correction decode was carried out is inputted into the voice sign decoder circuit (SP-COD) 20, voice decryption processing is carried out, and, thereby, a digital receiver signal is reproduced. This digital receiver signal is supplied to a loudspeaker 22 through the voice amplifier which is not illustrated after being returned to an analog receiver signal with D/A converter 21, and a sound-reinforcement output is carried out from this loudspeaker 22.
[0028] On the other hand, a sound is collected with a microphone 23 and a speaker's transmission voice is changed into a transmission signal, and after being amplified by predetermined level with the transmission amplifier which is not illustrated further, it is inputted into A/D converter 24. And in this A/D converter 24, it is sampled with a predetermined sampling period, and is changed into the digital transmission signal which consists of a sample pulse train by this. After a sound echo is canceled by the echo canceller which is not illustrated, this digital transmission signal is inputted into the voice sign decoder circuit (SP-COD) 20, and voice coding is carried out here.
[0029] This digital transmission signal by which voice coding was carried out is inputted into the error correcting code decoder circuit (CH-COD) 19 with the control signal outputted from the control circuit 30, and is error-correcting-code-ized here. And this error-correcting-code-ized digital sending signal is inputted into the TDMA circuit 18. In this TDMA circuit 18, the transmission frame corresponding to a time division multiple access (TDMA) method is generated, and processing for inserting the above-mentioned digital sending signal in the time slot assigned to the self-equipment in this transmission frame is performed. The digital sending signal outputted from this TDMA circuit 18 is continuously inputted into the digital modulation circuit (MOD) 25.
[0030] this -- digital modulation -- a circuit -- 25 -- **** -- the above -- digital one -- a sending signal --

digital modulation -- carrying out -- having had -- transmission -- an intermediate frequency signal -- generating -- having -- this -- transmission -- an intermediate frequency signal -- a D/A converter -- 26 -- an analog signal -- changing -- having had -- after -- a sending circuit -- (-- TX --) -- 15 -- inputting -- having . In addition, as a digital modulation method, pi / 4 shift DQPSK (pi/4shifted, differentially encoded quadrature phase shift keying) method is used, for example.

[0031] In a sending circuit 15, the transmitted intermediate frequency signal by which the modulation was carried out [above-mentioned] is mixed with the sending-station section oscillation signal outputted from the frequency synthesizer 14, and, thereby, is changed into the radio transmission wave frequency corresponding to a wireless message channel. And this radio transmission wave signal is transmitted towards the base station which is not illustrated from an antenna 11 through the antenna common machine 12, after being controlled by transmitted power level predetermined with the transmitted power amplifier which is not illustrated.

[0032] Moreover, this portable telephone has the key input section (KEY) 31 and a display (DISP) 32, and these key input sections 31 and displays 32 are arranged on a control panel. Among these, a display 32 consists of a liquid crystal display with a back light.

[0033] Furthermore, the power circuit of this portable telephone is constituted as follows. Namely, 33 in drawing is the dc-battery 33 which used rechargeable batteries, such as a lithium ion battery, and is the output voltage (battery voltage) V0 of this dc-battery 33. It is inputted into the electrical-potential-difference generation circuit 34. In this electrical-potential-difference generation circuit 34, it is the above-mentioned battery voltage V0. The stable operating voltage Vcc which each circuit section of telephone needs for a radical is generated, and this operating voltage Vcc is supplied to a control circuit 30 and a display 32 including a signal sender and receiver 10. Among these, switches 35 and 36 are inserted in the feed line to a signal sender and receiver 10 and a display 32. Opening and closing these switches 35 and 36 with the switch control signals S1 and S2 outputted from a control circuit 30, they control supply of the operating voltage Vcc to the above-mentioned signal sender and receiver 10 and a display 32.

[0034] Moreover, battery voltage V0 of the above-mentioned dc-battery 33 It is inputted into the electrical-potential-difference detector (V-DET) 37. This electrical-potential-difference detector 37 is the above-mentioned battery voltage V0. A value is detected, and it changes into digital value so that it can process in a control circuit 30. This digital value DS is incorporated in a control circuit 30.

[0035] by the way, a control circuit 30 is what was equipped with the microcomputer as the main control section, and is involved in communication link actuation as the control function -- various -- a control function -- in addition, it newly has dc-battery monitor / feed control function. This function is the battery voltage V0 detected by the above-mentioned electrical-potential-difference detector 37. That magnitude is judged by comparing with the thresholds TH1 and TH2 which set up digital value DS beforehand. While controlling the feed to a display 32 and a signal sender and receiver 10 according to the judgment result The informative-message information M1 on the purport that the remaining capacity of a dc-battery 33 fell is generated from the message generating section 38, and this informative-message information M1 is notified to the speaker of this portable telephone, and the speaker of a communications partner, respectively.

[0036] Next, dc-battery monitor / feed control action of the portable telephone constituted as mentioned above is explained according to the control procedure of a control circuit 30. Drawing 2 is a flow chart which shows the control procedure and the content of control.

[0037] It is the battery voltage V0 with which the control circuit 30 was detected by the electrical-potential-difference detector 37 in step 2a during the period which is communicating with other portable telephones or a wire telephone machine through the radio channel. Digital value DS is incorporated periodically. And it sets to step 2b and step 2c, and is this battery voltage V0. Digital value DS is compared with thresholds TH1 and TH2. It is battery voltage V0 temporarily now. If digital value DS is higher than any of each thresholds TH1 and TH2, it is battery voltage V0. It judges that it is normal and returns to control of an and also [it is the need] during communication link periods, such as call control.

[0038] Now, consumption of a dc-battery 33 progresses in this condition, and it is that electrical-potential-difference value V0. Suppose that it became TH1≤DS<TH2. If it does so, a control circuit 30 will generate the low-battery message information M1 that it means that shifted to step 2d and battery voltage fell from the message generating section 38 here. If it does so, this message information M1 will be superimposed by the receiver voice signal, and a sound-reinforcement output will be carried out from a loudspeaker 22 while a transmission signal is overlapped in the voice sign decoder circuit 20 and transmitted towards a call partner. In addition, as the above-mentioned low-battery message, the residue of "dc-battery decreased, for example. it becomes impossible to talk over the telephone soon " -- it is used.

[0039] Then, after transmission and the sound-reinforcement output of a low-battery message are completed, a control circuit 30 generates the switch control signal S1 in step 2e, and makes a switch 36 turn off. The feed to a display 32 is severed by this, and, as a result, the back light of a display 32 is switched off. Therefore, the power consumption of a portable telephone is controlled and, thereby, the remaining time of a portable telephone is extended.

[0040] When feed to a display 32 is made into **, a control circuit 30 is the battery voltage V0 return to step 2a and according to step 2b and 2c. The judgment of digital value DS is continued. And battery voltage V0 If it falls further and is set to TH1>DS, clear back control for [beyond this] judging that communicative continuation is difficult, shifting to step 2f, cutting a radio channel here, and returning to a waiting condition will be performed. And the switch control signal S2 is outputted by step 2g, a switch 35 is made off, and, thereby, feed to a signal sender and receiver 10 is made into **.

[0041] As mentioned above in the portable telephone of the gestalt of this operation It is battery voltage V0 during a communication link. It supervises by comparing a value with thresholds TH1 and TH2, and is battery voltage V0. When digital value DS serves as TH1<DS<TH2 While notifying a call partner by superimposing low-battery message information on a transmission sound signal, and transmitting It remains considering the feed to a display 32 as **, and extension of a time is aimed at, and it is battery voltage V0. After performing clear back processing, he is trying to sever the feed to a signal sender and receiver 10, when digital value DS turns into TH1>DS.

[0042] Therefore, according to the gestalt of this operation, the message of the purport battery voltage falls and it becomes impossible to use soon will be notified also to a call partner's speaker as opposed to the user of this portable telephone, and thereby, a phase sign language person can know clearly the condition of the portable telephone which is the call partner of self, before becoming a communication interruption. For this reason, even if it becomes a communication interruption, that cause not being known but memorizing puzzlement and displeasure is lost.

[0043] Moreover, it is battery voltage V0 in that case. Since it was made to notify the low-battery message when it fell to two or less threshold TH set up more highly than this threshold TH1, without waiting until it fell to the threshold TH1 which is the minimum actuation guarantee electrical-potential-difference value of a portable telephone, the notification action of a low-battery message can be performed certainly.

[0044] Furthermore, since the feed to a display 32 was severed with advice of the above-mentioned low-battery message, the probability which that of the power consumption by the back light of a display 32 can be lost, can be made to extend the remnant service life of the part dc-battery, remains by this, extends a time, and can complete a call henceforth increases.

[0045] (Gestalt of the 2nd operation) Drawing 3 is the circuit block diagram showing the configuration of the image record regenerative apparatus with a visual telephone function which is the gestalt of operation of the 2nd of the dc-battery actuation mold communication device concerning this invention.

[0046] In this drawing, the video signal and sound signal which came from communications-partner equipment through the subscriber line 40 of a public network into the visual telephone are inputted into the receiving signal-processing section 42 through the line connection control section 41. In the receiving signal-processing section 41, a recovery and decode processing of the above-mentioned video signal and a sound signal are performed, and, thereby, the receiving video signal and receiver voice signal of baseband are reproduced. And among this reproduced baseband signaling, a receiver voice

signal is supplied to a loudspeaker 44 through a circuit changing switch 43, and a sound-reinforcement output is carried out from this loudspeaker 44. On the other hand, a receiving video signal is supplied to a display (DISP) 47 respectively through an adder 45 and a circuit changing switch 46, and is displayed on this display 47. A display 47 consists of a backlit liquid crystal display and its actuation circuit.
[0047] On the other hand, the transmission sound signal outputted from the transmitting video signal and microphone 48 which were outputted from the image pick-up section 50 into the visual telephone is inputted into the sending-signal processing section 49, respectively. In the sending-signal processing section 49, predetermined coding processing and a predetermined modulation required in order to transmit to a subscriber line to the above-mentioned transmitting video signal and a transmission sound signal are performed, and the transmitting image and sound signal generated by this are transmitted to a subscriber line 40 through the line connection control section 41.
[0048] The sound signal outputted on the other hand from the video signal outputted from the image pick-up section 50 during image record and the microphone 48 is inputted into the record playback section 51, respectively. The record playback section 51 is what used semiconductor memory, the magneto-optic disk, and DVD (Digital video disk) as a record medium, and memorizes the above-mentioned video signal and a sound signal, respectively.
[0049] Moreover, the video signal by which reading appearance was carried out from the above-mentioned record playback section 51 during image reproduction is supplied to a display 47 through a circuit changing switch 46, and is displayed on this display 47. Moreover, the sound signal by which reading appearance was carried out with the above-mentioned video signal from the above-mentioned record playback section 51 is supplied to a loudspeaker 44 through a circuit changing switch 43, and a sound-reinforcement output is carried out from this loudspeaker 44.
[0050] By the way, the power circuit section of this image record regenerative apparatus is constituted as follows. Namely, 52 in drawing is the dc-battery which used rechargeable batteries, such as a lithium ion battery, and is the output voltage (battery voltage) V0 of this dc-battery 52. It is inputted into the electrical-potential-difference generation circuit 53. This electrical-potential-difference generation circuit 53 is the above-mentioned battery voltage V0. The stable operating voltage Vcc which each circuit section of equipment needs for a radical is generated, and this operating voltage Vcc is supplied to the feed control section 54. The feed control section 54 builds in three switches which carry out an on-off action according to the judgment signal S3 supplied from the residue judging section 55 mentioned later, and after it divides the above-mentioned operating voltage Vcc into three lines, it outputs them through the above-mentioned switch. the output destination change -- Vc2 -- the image pick-up section 50 -- moreover, Vc3 is set as a display 47 and Vc1 is further set as each other circuit sections, respectively.
[0051] Moreover, battery voltage V0 of the above-mentioned dc-battery 52 It is inputted into the residue judging section 55. This residue judging section 55 is the above-mentioned battery voltage V0. The magnitude of an electrical-potential-difference value is judged [two thresholds TH1 and TH2 which have set up the value beforehand / respectively], and the judgment signal S3 showing that judgment result is supplied to the above-mentioned feed control section 54 and the message generating section 56.
[0052] According to the judgment signal S3 supplied from the above-mentioned residue judging section 55, when battery voltage falls, the message generating section 56 generates the message information for notifying a call partner of suspending image pick-up actuation, and supplies it to the sending-signal processing section 49. Moreover, with it, the message information for telling the user of this equipment about suspending image pick-up actuation is generated, and an adder 45 is supplied. An adder 45 superimposes this message information on the receiving video signal outputted from the receiving signal-processing section 42, and is made to supply and display it on a display 47.
[0053] Next, dc-battery monitor / feed control action in the equipment constituted as mentioned above is explained. The transmission sound signal inputted into the video signal and microphone 48 which were picturized in the image pick-up section 50, and were obtained between the visual telephone equipment of the communications partner which is not illustrated through the subscriber line 40 in the period which is performing the visual telephone communication link is transmitted to a subscriber line 40 through the

line connection control section 41, after signal processing required for telephone communications, such as coding and a modulation, in the sending-signal processing section 49 is performed.
[0054] On the other hand, the video signal and sound signal which came through the subscriber line 40 from the visual telephone equipment of a communications partner are inputted into the receiving signal-processing section 42 through the line connection control section 41, recovery and decode processing are performed here, and the video signal and sound signal of baseband are reproduced. And among these, a video signal is inputted into a display 47 through an adder 45 and a circuit changing switch 46, and is displayed on this display 47. Moreover, a sound signal is supplied to a loudspeaker 44 through a changeover switch 43, and a sound-reinforcement output is carried out from this loudspeaker 44.
[0055] In this condition, the monitor and feed control of a dc-battery residue are performed in the power circuit section. Namely, output voltage V0 of a dc-battery 52 It is inputted into the residue judging section 55, and is compared with two thresholds TH1 and TH2 set up beforehand here, respectively. And battery voltage V0 If larger than any of each thresholds TH1 and TH2, it is battery voltage V0. Since it is normal, the judgment signal S3 is not outputted. For this reason, to each circuit section, feed is performed as before from the feed control section 54. Moreover, a message is not generated from the message generating section 56.
[0056] In addition, the residue of a dc-battery 52 generates the message which shows a certain thing enough, or the message showing a residue, and you may make it display this message on a display 47 from the message generating section 56 at this time.
[0057] Now, a dc-battery 52 is exhausted temporarily now and it is battery voltage V0. Suppose that it fell to TH1<V0 <TH2. If it does so, from the residue judging section 55, the judgment signal S3 which shows the above-mentioned judgment result will be generated. for this reason -- from the message generating section 56 -- for example, the residue of "dc-battery decreased -- transmission of an image is suspended soon -- " -- a residue lowering message [like] is generated and this message is supplied to the sending-signal processing section 49. For this reason, in the sending-signal processing section 49, the above-mentioned residue lowering message is superimposed or inserted in a transmitting video signal, and it is transmitted towards the visual telephone equipment of a communications partner. Therefore, the speaker of a communications partner can know the condition of communications-partner equipment by seeing the above-mentioned residue lowering message displayed on the display of self equipment.
[0058] In addition, the above-mentioned residue lowering message may be made into a speech synthesis message, this message may be inserted or superimposed on a transmission sound signal in the sending-signal processing section 49, and you may transmit to a communications partner. If it does in this way, the speaker of a communications partner can know the condition of communications-partner equipment by the speech synthesis message by which the sound-reinforcement output was carried out from the self earphone.
[0059] Moreover, the message for the speakers of self equipment is also generated from the above-mentioned message generating section 56. After this message is compounded by receiving image data with an adder 45, it is displayed on a display 47. For this reason, a speaker can know the condition of self equipment by checking by looking the above-mentioned message displayed on the display 47.
[0060] On the other hand, if the judgment signal S3 is generated from the above-mentioned residue judging section 55, the feed control section 54 will stop the feed of operating voltage Vc2 to the image pick-up section 50, after time amount (for example, several seconds - 10 seconds) required for the information of the above-mentioned residue lowering message passes.
[0061] Then, electrical-potential-difference value V0 of a dc-battery 52 after performing the information of a residue lowering message, and a feed halt to the image pick-up section 50 If it falls further and is set to V0 <TH1, the judgment signal S3 with which the above-mentioned judgment result is expressed from the residue judging section 55 will be outputted. For this reason, the feed control section 54 already stops feed of the operating voltage Vc1 and Vc3 to other circuit sections except the image pick-up section 50 under feed halt.
[0062] According to the gestalt of this operation, in the residue judging section 55, the remaining

capacity of a dc-battery 52 is judged in a visual telephone as mentioned above. Battery voltage V0 When it falls rather than a threshold TH2, a residue lowering message is generated from the message generating section 56. Since this message is superimposed or inserted in a transmitting video signal or a transmission sound signal and it was made to transmit to a communications partner, the speaker of a communications partner can know the condition of communications-partner equipment by the above-mentioned residue lowering message. For this reason, even if a receiving image serves as ** after that, that cause not being known but memorizing puzzlement and displeasure is lost.

[0063] Moreover, since it was made to make feed to the image pick-up section 50 into ** after the information of a residue lowering message Consumption of the power by the future image pick-up sections 50 can be lost, and the power consumption of equipment can be reduced. The probability which can be made to extend the battery life of a period until a dc-battery 52 falls to one or less threshold TH and becomes activity impossible by this, remains by this, extends a time, and can complete a call can be raised.

[0064] (Gestalt of the 3rd operation) Drawing 4 is the circuit block diagram showing the configuration of the image record regenerative apparatus with a visual telephone function which is the gestalt of operation of the 3rd of the dc-battery actuation mold communication device concerning this invention.

[0065] In this drawing, the video signal and sound signal which came from communications-partner equipment through the subscriber line 60 of a public network into the visual telephone are inputted into the receiving signal-processing section 63 through the line connection control section 62 of the transceiver section 61. In the receiving signal-processing section 63, a recovery and decode processing of the above-mentioned video signal and a sound signal are performed, and it is further changed into a digital signal. And this digital receiver voice signal and a digital video signal are inputted into a control section 70, respectively.

[0066] In a control section 70, processing for voice outputs, such as selection of a signal and insertion, and graphic display is performed to the above-mentioned digital receiver voice signal and a digital receiving video signal, respectively. After the digital receiver voice signal after this processing is changed into an analog signal with D/A converter 72 of the hand set section 71, the sound-reinforcement output of it is carried out from a loudspeaker 73. Graphic display of the digital receiving video signal is supplied and carried out to a display (DISP) 82. A display 82 consists of a backlit liquid crystal display and its actuation circuit. Moreover, the above-mentioned digital receiver voice signal and a digital receiving video signal are supplied to the record playback section 83, and are memorized by this record playback section 83. The record playback section 83 uses semiconductor memory, a magneto-optic disk, and DVD (Digital video disk) as a record medium.

[0067] On the other hand, after the transmission sound signal outputted from the transmitting video signal and microphone 74 which were outputted from the image pick-up section 80 is changed into a digital signal with A/D converters 81 and 75, respectively, it is inputted into a control section 70. In a control section 70, processing for transmission of selection of a signal, insertion, etc. or record is performed to the above-mentioned digital transmitting video signal and a digital transmission sound signal, respectively. And the digital transmitting video signal and digital transmission sound signal after this processing are inputted into the sending-signal processing section 64 of the transceiver section 61, and after signal processing for transmission, such as coding and a modulation, is performed here, they are transmitted to a subscriber line 60 through the line connection control section 63. Moreover, from a control section 70, the digital transmitting video signal and digital transmission sound signal after the above-mentioned processing are supplied to the record playback section 83, and are memorized.

[0068] Output voltage V0 of a dc-battery 90 (battery voltage) It is inputted into the electrical-potential-difference generation circuit 91. This electrical-potential-difference generation circuit 91 is the above-mentioned battery voltage V0. The stable operating voltage Vcc which each circuit section of equipment needs for a radical is generated, and this operating voltage Vcc is supplied to the feed control section 92. The feed control section 92 builds in four switches which carry out an on-off action according to feed control signal S4 generated from the control section 70 mentioned later, and after it divides the above-mentioned operating voltage Vcc into four lines, it supplies them to each circuit section through the

above-mentioned switch. The record playback section 83 and Vc3 are set as the image pick-up section 80, and, as for the supply place, Vc4 is set [Vc1] as the display 82 for the transceiver section 61 and Vc2, respectively.
[0069] Moreover, battery voltage V0 of the above-mentioned dc-battery 90 It is inputted into the electrical-potential-difference detector (V-DET) 93. The electrical-potential-difference detector 93 is the above-mentioned battery voltage V0. A value is detected, and it changes into digital value so that it can process by the control section 70. This digital value DS is incorporated by the control section 70.
[0070] by the way, a control section 70 is what was equipped with the microcomputer as the main control section, and is involved in communication link actuation as the control function -- it is variously involved in a control function and record playback actuation -- various -- a control function -- in addition, it newly has dc-battery monitor / feed control function.
[0071] This dc-battery monitor / feed control function is the battery voltage V0 detected by the above-mentioned electrical-potential-difference detector 93. That magnitude is judged by comparing with the thresholds TH1, TH2, and TH3 which set up digital value DS beforehand. And the informative-message information on the purport that the remaining capacity of a dc-battery 33 fell according to that judgment result is generated, and this informative-message information is reported to the speaker of this equipment, and the speaker of a communications partner, respectively.
[0072] Moreover, by directing to the feed control section 92, on-off control of the feed to a display 82, the image pick-up section 80, the transceiver section 61, and the record playback section 83 is carried out. Furthermore, while memorizing the receiving video signal it became impossible to display on the record playback section 83, the alternative image information memorized beforehand is read from the record playback section 83, and a communications partner is made to turn and transmit this alternative image information instead of a transmitting video signal after a display-action halt and an image pick-up actuation halt.
[0073] Next, dc-battery monitor / feed control action of the image record regenerative apparatus with a visual telephone function constituted as mentioned above is explained according to the control procedure of a control section 70. It is the battery voltage V0 detected by the electrical-potential-difference detector 93 in step 5a in the visual telephone as a control section 70 was shown at drawing 5 . Digital value DS is incorporated periodically. And it sets to steps 5b, 5c, and 5d, and is this battery voltage V0. Digital value DS is compared with thresholds TH1, TH2, and TH3.
[0074] Now battery voltage V0 For digital value DS, if higher than any of each thresholds TH1, TH2, and TH3, a control section 70 is battery voltage V0. It judges that it is normal and returns to control of an and also [it is the need] during communication link periods, such as call control.
[0075] Now, the remaining capacity of a dc-battery 90 decreases in this condition, and suppose that that output voltage value V0 fell rather than the threshold TH3, and became TH2<DS<TH3 as shown in drawing 6 .
[0076] If it does so, as shown in drawing 7 , a control section 70 will give directions first to the feed control section 92 by step 7a, will supply operating voltage Vc2 to the record playback section 83, and, thereby, will start the record playback section 83. Next, the display off message which tells stopping the display action of a receiving image by step 7b is created, this display off message is inserted in a transmitting sound signal by step 7c, and it is made to transmit towards a communications partner from the sending-signal processing section 64. In addition, as a display off message, "since the remaining capacity of a dc-battery fell, the display of a receiving image becomes impossible henceforth" is used.
[0077] For this reason, from the earphone of a communications partner, the above-mentioned display off-message is outputted in the condition of having been inserted in the receiver voice, and a phase sign language person can know that the image which self transmitted in the equipment of a communications partner after a while by this message will no longer be displayed.
[0078] Moreover, with it, a control section 70 inserts a display off message in a receiver voice signal in step 7d, and carries out a sound-reinforcement output from a loudspeaker 73. For this reason, the speaker of this equipment can also know turning off the display of a receiving image henceforth by consumption of a dc-battery by the above-mentioned display off-message.

[0079] Then, after ending information control of a display off-message, a control section 70 is the battery voltage V0 which gives directions to the feed control section 92 in step 7e, makes ** feed of operating voltage Vc4 to a display 82, and is shown in drawing 5 . It returns to a monitor. Therefore, henceforth, although the display action of the receiving image in a display 82 is no longer performed, from a control section 70, this receiving video signal is led to the record playback section 83, and is memorized instead. For this reason, after completing a call and exchanging dc-batteries, by reproducing the above-mentioned receiving image from the record playback section 83, a speaker cannot leak the receiving image sent from the communications partner, and can check it.
[0080] Next, electrical-potential-difference value V0 of a dc-battery 90 Suppose that it fell further and became TH1<DS<TH2. When it does so, a control section 70 creates the image pick-up off-message which means suspending image pick-up actuation henceforth in step 8a, inserts this image pick-up off-message in a transmission sound signal by step 8b, and makes it transmit towards a communications partner from the sending-signal processing section 64, as shown in drawing 8 .
[0081] In addition, as an image pick-up off message, the remaining capacity of for example, "dc-battery decreased further. transmission of an image becomes impossible henceforth " -- it is used.
[0082] For this reason, from the earphone of a communications partner, the above-mentioned image pick-up off-message is outputted with a receiver voice, and a phase sign language person can know in advance that transmission of the image from the equipment of a communications partner will be henceforth suspended by this message.
[0083] Moreover, with it, a control section 70 inserts an image pick-up off message in a receiver voice signal in step 8c, and carries out a sound-reinforcement output from a loudspeaker 73. For this reason, the speaker of this equipment can also know that transmission of an image will be henceforth suspended by consumption of a dc-battery by the above-mentioned image pick-up off-message.
[0084] Then, after ending information control of an image pick-up off-message, a control section 70 reproduces the alternative image information beforehand memorized from the record playback section 83 in step 8d, and makes this alternative image information transmit to the equipment of a communications partner instead of the video signal from the image pick-up section 80. For this reason, the above-mentioned alternative image will be displayed on the display of communications-partner equipment, and a phase sign language person's insecurity is mitigated. In addition, as alternative image information, the speaker image picturized, for example during the time of initiation of this communication link or a communication link, scenery, a test image which were memorized beforehand, etc. are used. Moreover, into these alternative images, the above-mentioned image pick-up off message may be inserted fixed in that case.
[0085] Finally a control section 70 is the battery voltage V0 which gives directions to the above-mentioned feed control section 92 in step 8e, makes ** feed of operating voltage Vc3 to the image pick-up section 80, and is shown in drawing 5 . It returns to a monitor. Therefore, the image pick-up actuation by the image pick-up section 80 stops henceforth.
[0086] And as shown in drawing 6 , it is battery voltage V0. If it falls further and is set to TH1>DS A control section 70 shifts to step which judges that communicative continuation is difficult and is shown in drawing 9 from step 5d of drawing 5 9beyond this a. Create a communication link end message here, this message is made to turn and transmit to a communications partner from the sending-signal processing section 64 by step 9b, and this tells a phase sign language person about communication link termination. Moreover, with it, in step 9c, the sound-reinforcement output of the above-mentioned communication link end message is carried out from a loudspeaker 73, and this tells communication link termination to the speaker of self-equipment.
[0087] And if it checks that fixed time amount required for the information of the above-mentioned communication link end message has passed in step 9d, a control section 70 shifts to step 9e, gives disconnect indication to the line connection control section 62 here, will make a subscriber line 60 cut, will give directions to the feed control section 92 at the appropriate after step f, and will make ** supply of the operating voltage Vc1 and Vc2 to the transceiver section 61 and the record playback section 83.
[0088] With the image record regenerative apparatus with a visual telephone function of the gestalt of

this operation, it is battery voltage V0 in a visual telephone as mentioned above. It supervises by comparing a value with thresholds TH1, TH2, and TH3, and is battery voltage V0 first. When digital value DS serves as TH2<DS<TH3, after generating a display off-message and notifying to a communications partner, feed to a display 82 is made into **. And it is battery voltage V0 next. When digital value DS falls further and serves as TH1<DS<TH2, after generating an image pick-up off message and notifying to a communications partner, feed to the image pick-up section 80 is made into **. It is battery voltage V0 to the last. When digital value DS falls further and turns into TH1>DS, after notifying a communication link end message to a communications partner, he performs clear back processing, and is trying to sever the feed to the appropriate back transceiver section 61 and the record playback section 83.

[0089] Therefore, according to this equipment, it is battery voltage V0. Since the feed to a display 82, the image pick-up section 80, the transceiver section 61, and the record playback section 83 serves as ** one by one in the process of that lowering when it falls, the probability which can be made to extend the remnant service life of a dc-battery, remains by this, extends a time, and can complete a call can be raised.

[0090] Moreover, since a display off-message, an image pick-up off-message, and a communication link end message are created in advance and the speaker of a communications partner is notified in case the above-mentioned feed is made into ** one by one, a phase sign language person can grasp accurately change of the operating state of the partner equipment accompanying consumption of a dc-battery 90 in advance by advice of these messages. For this reason, even if change of operating state arises, a cause not being known but memorizing puzzlement and displeasure is lost.

[0091] He is trying to memorize a receiving video signal in the record playback section 83 instead of this display action after a halt of a display 82 of operation with the gestalt of this operation furthermore. for this reason, the video signal with which the speaker of self-equipment was received during the display-action halt period -- the need -- responding -- a connoisseur -- it can reproduce and see after termination, and it cannot leak and the image information sent by the partner by this can be checked. Moreover, he reproduces the alternative image beforehand memorized from the record playback section 82 instead of the image pick-up image after the halt of the image pick-up section 80 of operation, and is trying to transmit to a communications partner. For this reason, a phase sign language person can see an alternative image, even if image pick-up actuation of partner equipment stops, and fear of this taking equipment for failure disappears.

[0092] (Gestalt of the 4th operation) the part accompanying lowering or it of the remaining capacity of a dc-battery in the gestalt of this operation -- in case a halt of operation is notified to a communications partner, the specific control code beforehand decided to be a message-sending side between communication devices is transmitted, this control code is received in a message receiving side, the message corresponding to this code is created, and it is made to display on a display

[0093] Drawing 10 is the circuit block diagram showing the important section configuration of the image record regenerative apparatus with a visual telephone function concerning the gestalt of implementation of the 4th of this invention. In addition, in this drawing, the same sign is given to the same part as said drawing 4 , and detailed explanation is omitted.

[0094] The equipment by the side of message sending is battery voltage V0. If it falls rather than a threshold, in a control section 70, the control code which matched with the message by control-code generating means 70a, and was defined beforehand will be generated, this control code will be inserted or superimposed on a transmitting video signal or a transmission sound signal by code insertion means 70b, and it will transmit to a subscriber line 40 through the line connection control section 63 from the sending-signal processing section 64.

[0095] On the other hand, in a control section 70, the equipment of a message receiving side extracts a control code out of a receiving video signal or a receiving sound signal by control-code extract means 70c, and generates a message [/ based on this control code] by 70d of message generating means. And this message is inserted in a receiving video signal as a telop by message insertion means 70e, and it is made to display on a display 82.

[0096] Moreover, the purport of a halt of operation can be notified in a short time efficiently, without checking transmission of original voice data or image data compared with the case where a voice-told message and an image message are transmitted as it is, since with such a configuration it replaces with a message and a control code is transmitted.
[0097] In addition, this invention is not limited to the gestalt of each above-mentioned implementation. For example, in case the message of a purport which suspends actuation is transmitted, the remaining capacity or the remaining time of a dc-battery in this event is computed, this calculation value is combined, and you may make it transmit.
[0098] Moreover, although ****** [as opposed to a display 82 at the gestalt of the 3rd operation] and ****** to the image pick-up section 80 were independently performed corresponding to different thresholds TH3 and TH2, it matches with a threshold TH3 or TH2, and may be made to carry out simultaneously. In this case, what is necessary is just to set up the content of the informative message suitably according to the object of the above-mentioned ******.
[0099] Furthermore, as long as the communication link continues not only 1 time but after being made to carry out multiple-times repeat transmission and a dc-battery residue's falling below to a predetermined value, current-events **** detection of the lowering of a dc-battery residue is carried out, and you may make it notify a message.
[0100] In addition, also with the relation between the transmit timing of the number of phases of the class of equipment, or the threshold for that configuration and lowering detection of a dc-battery residue, the content of the informative message and its transmission system, and a communication message, and the timing of ******, and the function set as the object of ******, in the range which does not deviate from the summary of this invention, it deforms variously and can carry out.

[Translation done.]

* NOTICES *

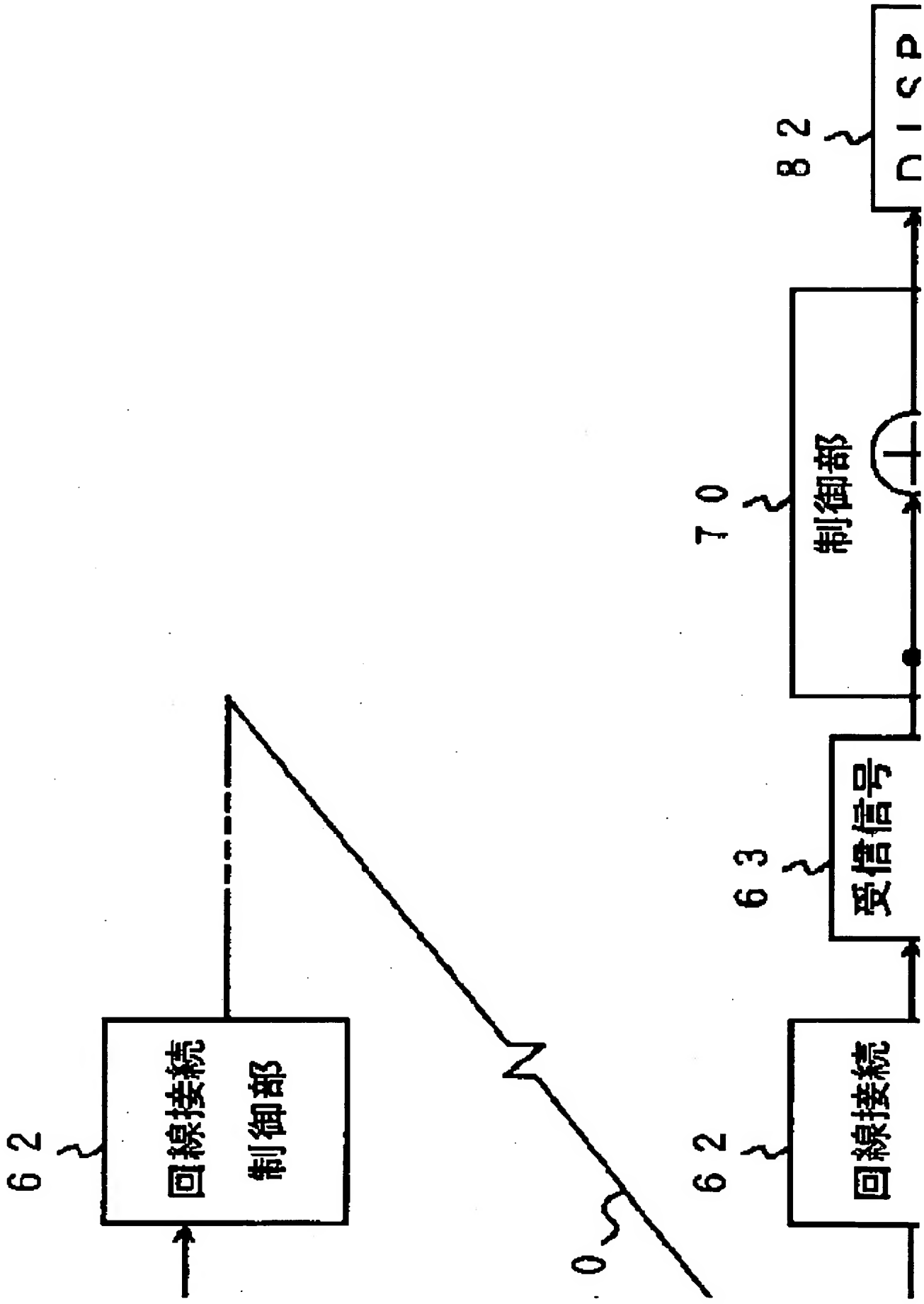
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The circuit block diagram showing the configuration of the digital portable telephone which is the 1st operation gestalt of the dc-battery actuation mold communication device concerning this invention.
[Drawing 2] The flow chart which shows the dc-battery monitor feed control action in the portable telephone shown in drawing 1 .
[Drawing 3] The circuit block diagram showing the configuration of the image record regenerative apparatus with a visual telephone function which is the gestalt of operation of the 2nd of the dc-battery actuation mold communication device concerning this invention.
[Drawing 4] The circuit block diagram showing the configuration of the image record regenerative apparatus with a visual telephone function which is the gestalt of operation of the 3rd of the dc-battery actuation mold communication device concerning this invention.
[Drawing 5] The flow chart which shows the main routine of the dc-battery monitor feed control action in the equipment shown in drawing 4 .
[Drawing 6] Drawing showing an example of the relation of the lowering and the threshold of battery voltage.
[Drawing 7] The flow chart which shows the display off-routine of the dc-battery monitor feed control action in the equipment shown in drawing 4 .
[Drawing 8] The flow chart which shows the image pick-up off-routine of the dc-battery monitor feed control action in the equipment shown in drawing 4 .
[Drawing 9] The flow chart which shows the communication link termination routine of the dc-battery monitor feed control action in the equipment shown in drawing 4 .
[Drawing 10] The circuit block diagram showing the important section configuration of the image record regenerative apparatus with a visual telephone function concerning the gestalt of implementation of the 4th of this invention.
[Description of Notations]
11 -- Antenna
12 -- Antenna common machine (DUP)
13 -- Receiving circuit (RX)
14 -- Frequency synthesizer (SYN)
15 -- Sending circuit (TX)
16, 24, 75, 81 -- A/D converter
17 -- Digital demodulator circuit (DEM)
18 -- Time division multiple access circuit (TDMA)
19 -- Error correcting code decoder circuit (CH-COD)
20 -- Voice sign decoder circuit (SP-COD)
21, 26, 72 -- D/A converter
22, 44, 73 -- Loudspeaker

23, 48, 74 -- Microphone
25 -- Digital modulation circuit (MOD)
30 -- Control circuit
31 -- Key input section (KEY)
32, 47, 82 -- Display (DISP)
33, 52, 90 -- Dc-battery
34, 53, 91 -- Electrical-potential-difference generation circuit
35 36 -- Switch
37 93 -- Electrical-potential-difference detector (V-DET)
38 56 -- Message generating section
40 60 -- Subscriber line of a public network
41 62 -- Line connection control section
42 63 -- Receiving signal-processing section
43 -- Circuit changing switch
45 -- Adder
46 -- Circuit changing switch
49 64 -- Sending-signal processing section
50 80 -- Image pick-up section
51 83 -- Record playback section
54 92 -- Feed control section
55 -- Residue judging section
61 -- Transceiver section
70 -- Control section
70a -- Control-code generating means
70b -- Code insertion means
70c -- Control-code extract means
70d -- Message generating means
70e -- Message insertion means
71 -- Hand set section

[Translation done.]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